

ABSTRACT

AIM:

- ▶ To analyze the apical delta morphologies in mandibular molars and to evaluate the sealer penetration after chemo-mechanical preparation/obturation using Micro CT.

OBJECTIVES:

The objectives of this in vitro study were as follows

- To analyze the percentage of apical delta in mandibular molars
- To analyze the percentage of apical delta in mesial and distal roots in mandibular molars
- To measure the vertical extension of the apical deltas in mandibular molars.
- To analyze the average ramification of the apical delta in mandibular molars
- To measure the percentage of voids formed by different sealers after obturation.

METHODOLOGY:

One Hundred extracted human Mandibular Molars were used for this study. Teeth were scanned preoperatively using Micro CT. Tooth samples with apical delta were selected and their prevalence in Mandibular Molars were analyzed. The tooth samples were divided into three groups based on the sealers

used for obturation. Group1 consists of Ah Plus , Group 2 of Rc Seal and Group 3 of Seal Apex. Three experimental groups were shaped using hand files and obturated using three different sealers. The obturated samples were scanned using Micro CT to assess the voids formed during obturation in the apical region.

RESULTS:

Result of this present study showed that the prevalence of apical delta is more in the Mandibular Molars. Apical delta prevalence is more in the Distal root than the Mesial root. The mean vertical extension of the apical delta ramifications is around 1.02mm and the average ramifications is around 3.92. No statistical difference were found between the three sealers. The voids produced during obturation is less in Ah Plus comparatively.

CONCLUSION:

1. The occurrence of apical delta is not uncommon in day to day clinical practice. Mandibular molars has the highest percentage of delta prevalence. The shape, height, and average ramifications are variable.
2. The complex morphological properties of apical delta complicate the three dimensional cleaning and obturation of the root canal system. No significant difference was observed between the three sealers. Ah Plus sealer showed less percentage of voids compared to RC Seal and Seal Apex.

Keywords : Apical delta, Micro CT, RC Seal, Seal Apex, Ah Plus